

REMARKS

Favorable reconsideration of this application in view of the foregoing amendments and remarks to follow is respectfully requested.

Claims 1-20 are pending in this application. In this response, Claims 1 and 9 have been amended. Specifically, Applicants have amended Claims 1 and 9 to recite that the subcollector continuously extends through the outer well regions, e.g., N-well, and the inner well regions, e.g., P-well, of the substrate. Support for this amendment can be found, for example, in Figures 1A-1D, as well as paragraph 0042 of the originally filed application. More specifically, paragraph 0042 describes that the implant may be a blanket implant providing a continuous subcollector throughout the entire substrate. Applicants have also amended Claims 1 and 9 to include the subject matter that is recited in dependent Claims 5 and 11. In light of the foregoing amendment to Claims 1 and 9, dependent Claims 5 and 11 have been cancelled. Turning to the present grounds of rejection.

Claims 1-3, 5-9 and 11-14 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Pat. No. 6,949,440 to Gau (“Gau”). Applicants traverse the aforementioned rejection and submit the following.

It is axiomatic that anticipation under §102 requires the prior art reference to disclose every element to which it is applied. *In re King*, 801 F.2d 1324, 1326, 231 USPQ 36, 138 (Fed Cir, 1986). Thus, there must be no differences between the subject matter of the claim and the disclosure of the prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: absence from the applied reference of any claimed element negates

anticipation. *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Applicants submit that Gau fails to anticipate Applicants' invention, because the applied prior art reference fails to disclose each and every limitation of Applicants' claimed invention, as recited in amended Claims 1 and 9. More specifically, Gau fails to disclose a varactor structure including a semiconductor substrate of a first conductivity type, said substrate including a subcollector of a second conductivity type located below an upper region of said substrate, said first conductivity type is different from said second conductivity type; a well region located in said upper region of said substrate, wherein said well region includes outer well regions of said second conductivity type and an inner well region of said first conductivity type, each well of alternating conductivity type of said well region is separated at an upper surface by an isolation region and each outer well region has an upper surface which includes a source/drain region; a field effect transistor having at least a gate conductor of said first conductivity type located above said inner well region, the outer well regions and the inner well region are in contact with the subcollector having the second conductivity type, wherein each well of alternating conductivity type of said well region extends beneath the isolation region to the subcollector such that neighboring well regions are in contact with each other along the entire depth of each well region, *wherein the subcollector continuously extends through the outer well region and the inner well region of the substrate*, as recited in amended Claim 1. Amended Claim 9 includes similar limitations as amended Claim 1, and requires that the subcollector continuously extends through the outer N-well regions and the inner P-well region.

Referring to Figure 11 of Gau, as cited by the Examiner, the subcollector 42 is clearly depicted as being non-continuous, i.e., not extending in a continuous manner across the entire

width of the outer well regions and inner well regions. More specifically, referring to Page 3 of the present Office Action and utilizing the Examiner's notations, the inner well region 46 and the outer well region 48 are clearly depicted as having separate and independent subcollectors 42. Because the subcollector 42 for the inner well region 46 is separate and independent of the subcollector 42 of the outer well region 48, Gau fails to disclose a subcollector that continuously extends through the outer well region and the inner well region of the substrate, and therefore fails to anticipate amended Claims 1 and 9.

Further, and with respect to amended independent Claims 1 and 9, Applicants submit Gau fails to disclose where "the outer well regions and the inner well region are in contact with the subcollector." (*See* amended Claim 1, and as similarly recited by amended Claim 9.) Assuming, that Gau discloses outer well regions 44 and 52, as asserted by the Examiner, FIG. 11 of Gau clearly shows that the outer region 52 extends only partially into the substrate 40. However, the outer region 52 does not contact the subcollector 42. In contrast, and in the claimed invention, the well regions 20A, 20B and 20C extend down to the surface of the n⁺ subcollector 14, as is depicted, for example, in FIG. 1C. Gau, however, fails to disclose this claimed feature. Therefore, Applicants submit that Gau fails to disclose each and every element of the claimed invention and respectfully request withdrawal of the rejection under 35 U.S.C. §102(e).

As an independent basis under which Gau fails to anticipate Applicants' invention, Applicants submit that Gau fails to disclose where "each inner well region and each outer well region extends beneath the isolation region to the subcollector such that neighboring outer and inner well regions are in contact with each other along the entire depth of each well region beneath the isolation region." (*See* amended Claim 1, and as similarly recited by amended Claim

9.). Instead, Gau discloses neighboring wells that are separated by portions of the substrate. FIG. 11 of Gau shows wells 44, 46 and 48 that are each separated from each other by substrate 40 and isolation regions 50. As each well in Gau extends beneath the isolation region 50 towards the buried N-type doping region 42, the thickness of substrate 40 between each well increases. Accordingly, Gau clearly fails to disclose, *inter alia*, neighboring well regions that are in contact with each other along the entire depth of each well region beneath the isolation region.

Therefore, Applicants submit that Gau fails to disclose each and every element of the claimed invention and respectfully request withdrawal of the rejection under 35 U.S.C. §102(e).

In light of the above, Applicants respectfully submit that all claims are in condition for allowance. Should the Examiner require anything further to place the application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the number listed below.

Respectfully submitted,



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